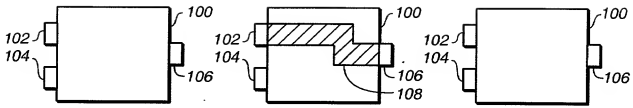


FIG._A1 FIG._A2 FIG._A3

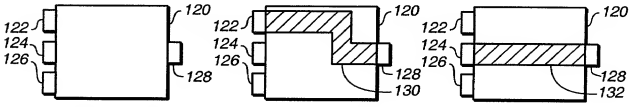


FIG._B1 FIG._B2 FIG._B3

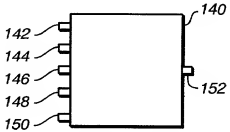


FIG._C1

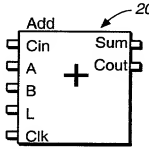


FIG._D1

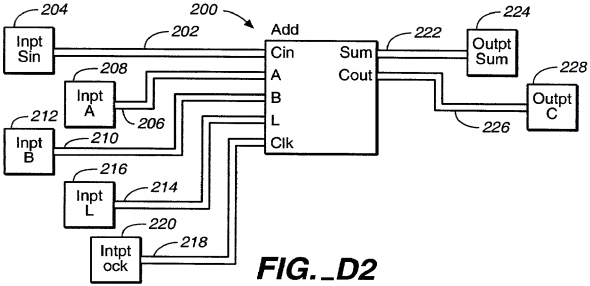


FIG._D2

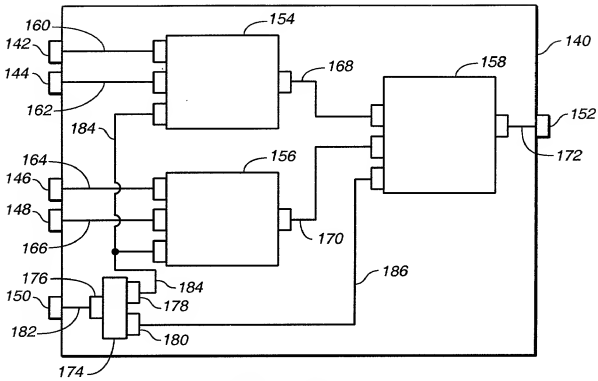


FIG._C2

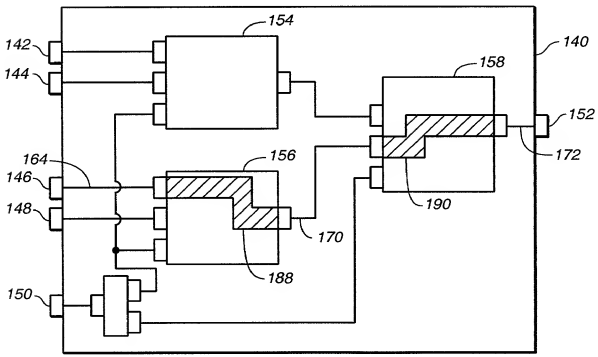


FIG._C3

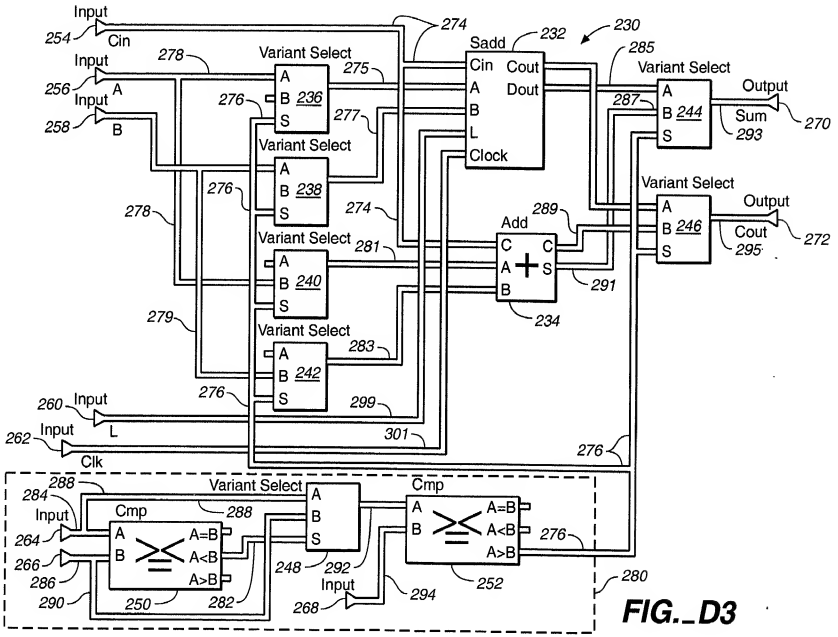

Input
254
Cin
Input
256
A
Input
258
B
278
Variant Select
A
B 236
S
276
275
274
Sadd
232
230
Cin
Cout
A
Dout
B
L
Clock
285
Variant Select
A
B 244
S
287
Output
Sum
293
270
277
Variant Select
A
B 238
S
276
278
274
289
Add
C
C
A
S
B
291
234
Variant Select
A
B 246
S
Output
Cout
295
272
Variant Select
A
B 240
S
281
279
Variant Select
A
B 242
S
283
276
299
260
Input
L
262
Input
Clk
301
276
280
284
Input
264
266
286
290
288
Cmp
A
B
A=B
A<B
A>B
250
Variant Select
288
A
B
S
282
248
292
Cmp
A
B
A=B
A<B
A>B
276
252
Input
268
294

FIG._D3

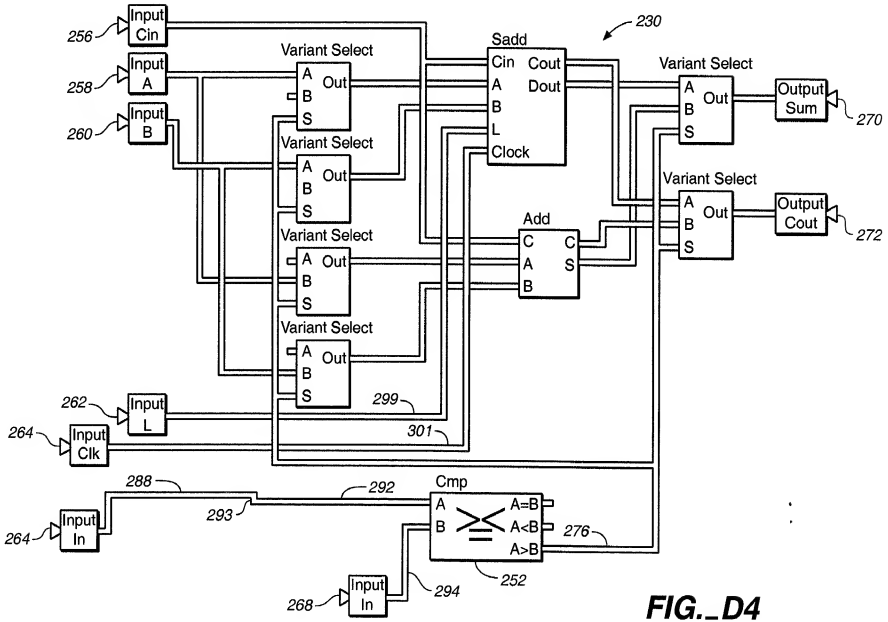

Input Cin
256
Input A
258
Input B
260
Variant Select
A
B
S
Out
Sadd
230
Cin
Cout
A
Dout
B
L
Clock
Add
C
S
Variant Select
Output Sum
270
Output Cout
272
262
Input L
264
Input Clk
299
301
288
292
293
Cmp
A=B
A<B
A>B
276
252
Input In
264
268
294

FIG._D4

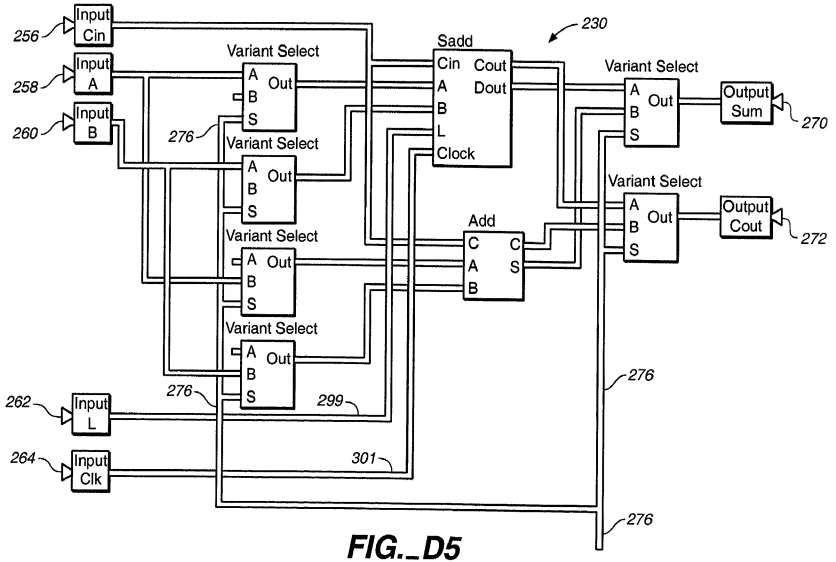

Input Cin
256
Input A
258
Input B
260
Variant Select
A
B
S
Out
276
Sadd
230
Cin
Cout
A
Dout
B
L
Clock
Add
C
S
Output Sum
270
Output Cout
272
Input L
262
Input Clk
264
299
301

FIG._D5

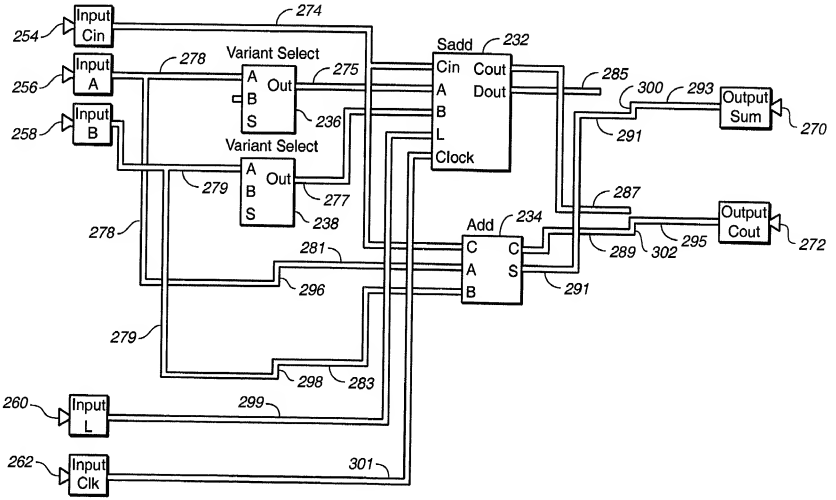

Input Cin
254
274
Input A
256
278
Variant Select
A
B
S
Out
275
Input B
258
236
Variant Select
279
277
238
278
Sadd
232
Cin
A
B
L
Clock
Cout
Dout
285
300
293
Output Sum
270
291
287
Add
234
C
A
B
S
281
296
289
302
295
Output Cout
272
291
279
298
283
260
Input L
299
262
Input Clk
301

FIG._D6

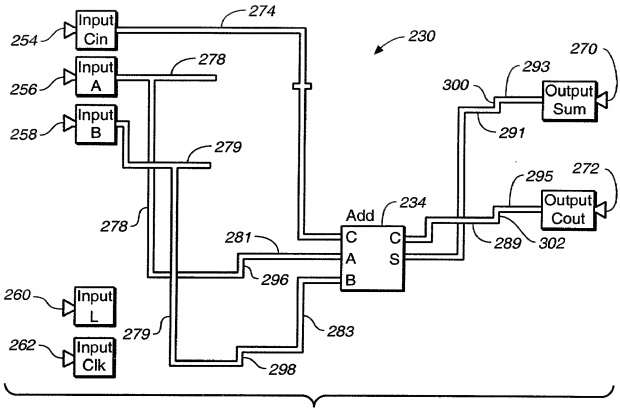


FIG._D7

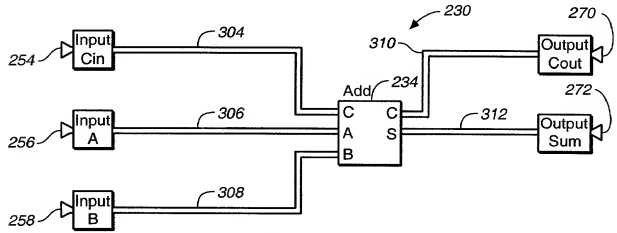


FIG._D8

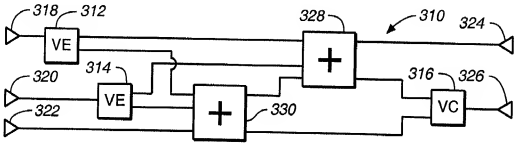


FIG._D9

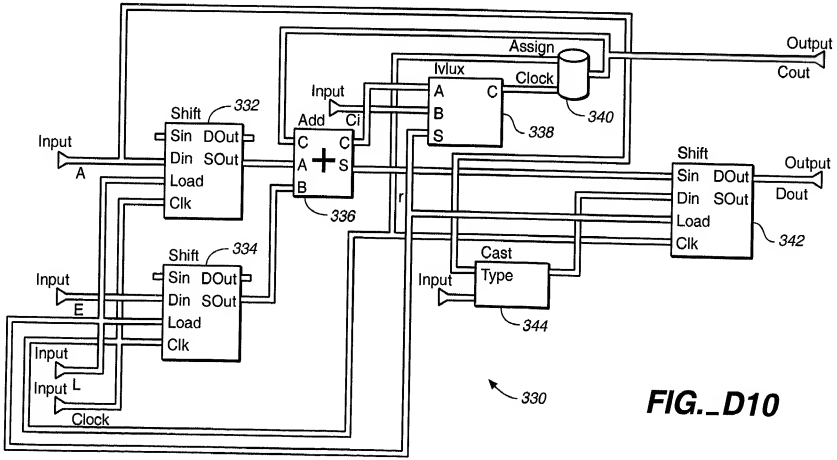


FIG._D10

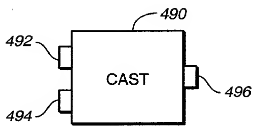


FIG._E1A

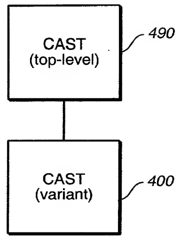


FIG._E1B

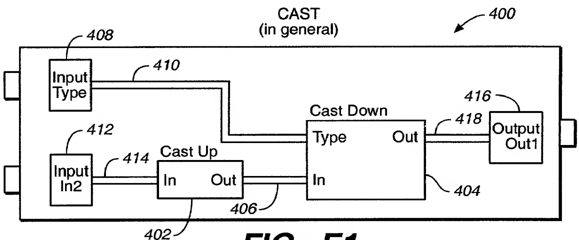


FIG._E1

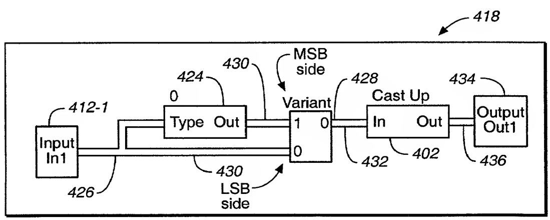


FIG._E2

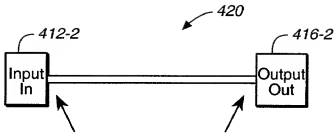

420
412-2
416-2
Input
In
Output
Out

FIG._E3

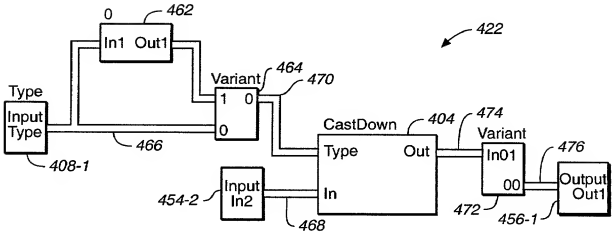

0
462
In1 Out1
422
Variant
464
470
Type
Input
Type
1 0
0
466
408-1
CastDown
404
474
Variant
Type
Out
In01
476
00
Output
Out1
Input
In2
454-2
In
472
456-1
468

FIG._E4

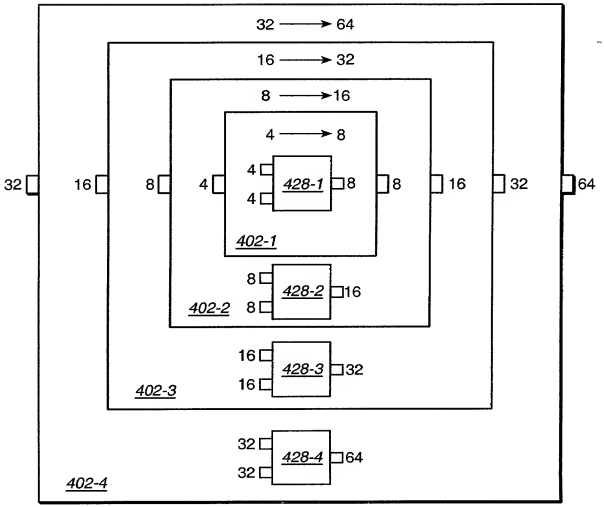

32 → 64
16 → 32
8 → 16
4 → 8
4
4
428-1
8
8
16
32
64
32
16
8
4
402-1
8
428-2
16
8
402-2
16
428-3
32
16
402-3
32
428-4
64
32
402-4

FIG._E5

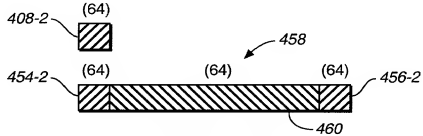


FIG._E6

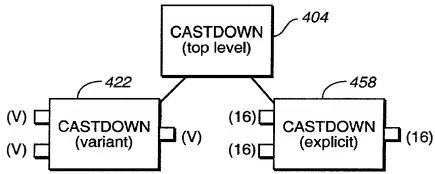


FIG._E7

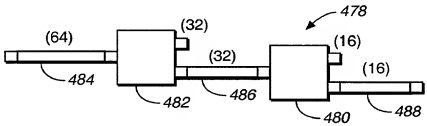


FIG._E8

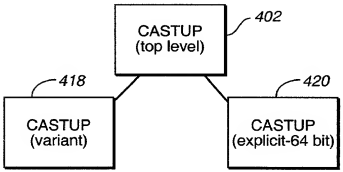


FIG._E9

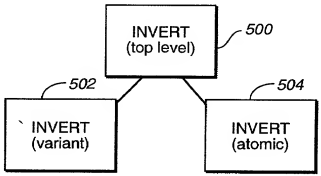


FIG._F1

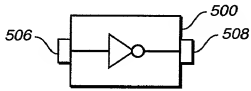


FIG._F2

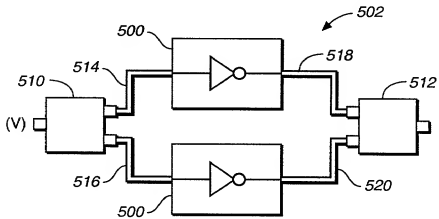


FIG._F3

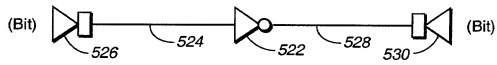


FIG._F4

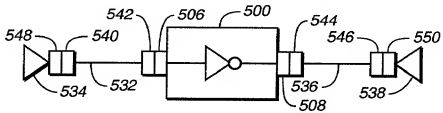


FIG._F5

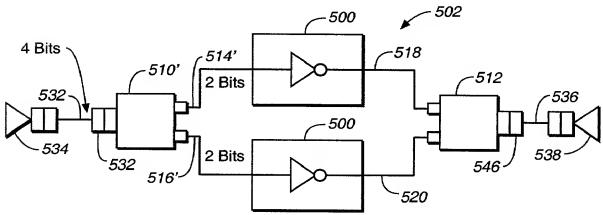


FIG._F6

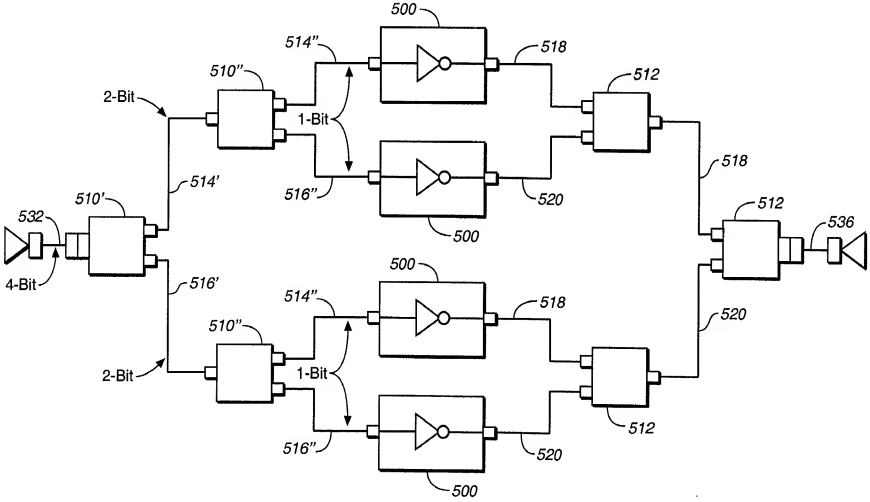

500
514"
518
510"
512
2-Bit
1-Bit
518
514'
516"
520
510'
512
532
500
536
4-Bit
516'
500
514"
518
520
510"
2-Bit
1-Bit
512
516"
520
500

FIG._F7

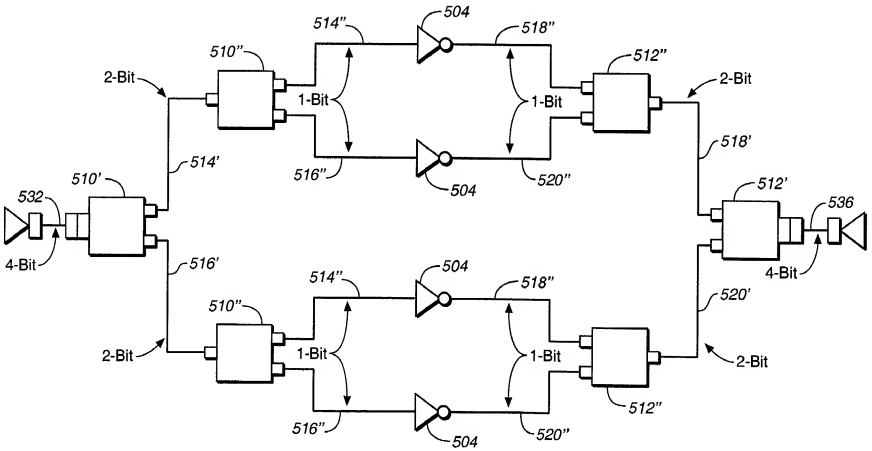


FIG._F8

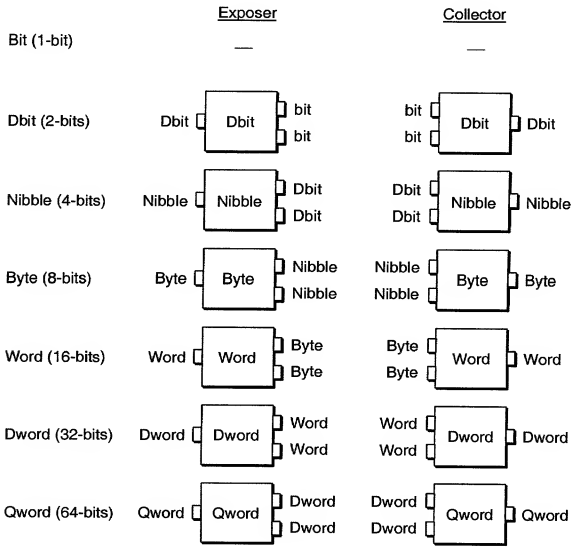

Exposer
Collector
Bit (1-bit)
Dbit (2-bits)
Dbit
bit
bit
Nibble (4-bits)
Nibble
Dbit
Byte (8-bits)
Byte
Nibble
Word (16-bits)
Word
Byte
Dword (32-bits)
Dword
Word
Qword (64-bits)
Qword
Dword

FIG._G1

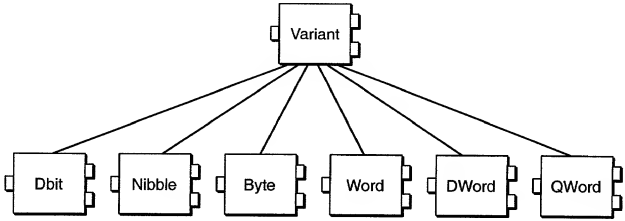


FIG._G2

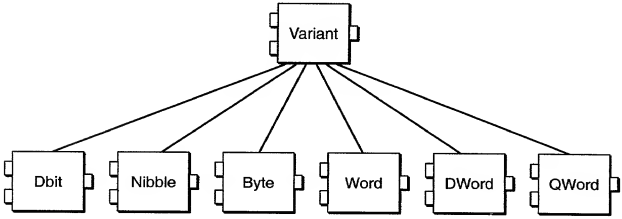


FIG._G3

FIG._H1

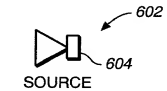


FIG._H2

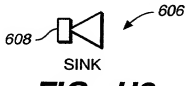


FIG._H3

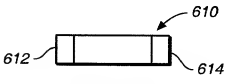


FIG._H4

FIG._H5

FIG._H6

FIG._H7

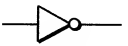


FIG._H8

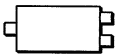


FIG._I1

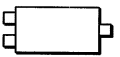
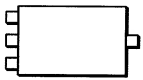
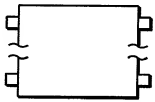


FIG._I2



VARIANT SELECTOR

FIG._I3



COMPOSITE OBJECT

FIG._I4

TRANSPORT JUNCTION

FIG._I5

Menu Commands

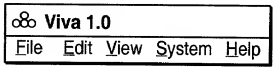


FIG._J-1

File Menu

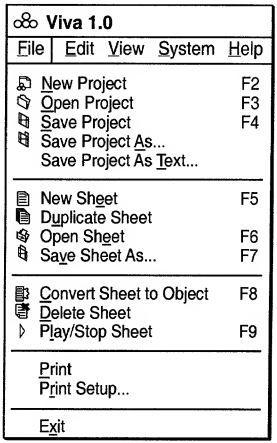


FIG._J-2

FIG._J-3

- New Project
- Open Project
- Save Project
- Save Project As
- New Sheet
- Duplicate Sheet
- Open Sheet
- Save Sheet As
- Convert Sheet to Object
- Delete Sheet
- Play/Stop
- Print
- Print Setup
- Exit — Quits VIVA.

New Project Command

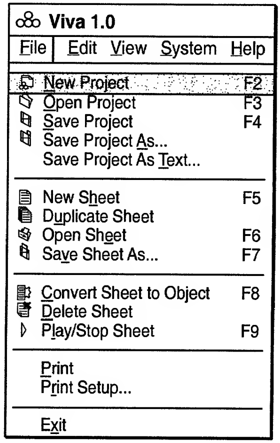


FIG._J-4

Open Project Command

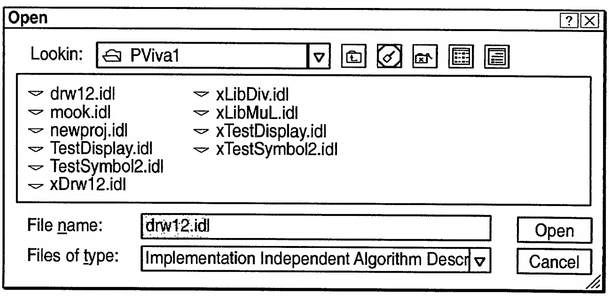


FIG._J-5

Save Project Command

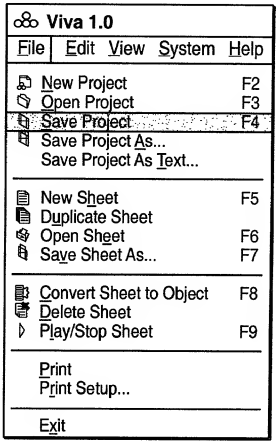


FIG._J-6

Save Project As Command

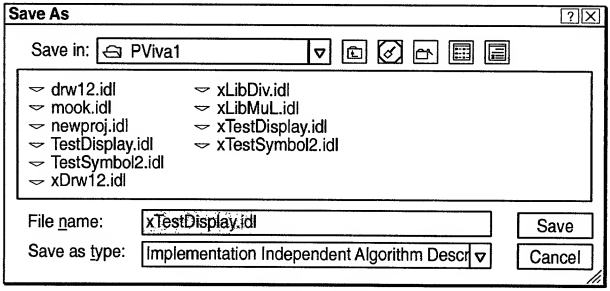


FIG._J-7

New Sheet Command

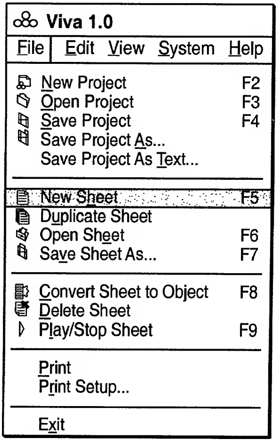


FIG._J-8

Duplicate Sheet Command

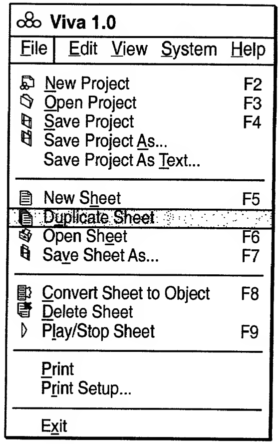


FIG._J-9

Open Sheet Command

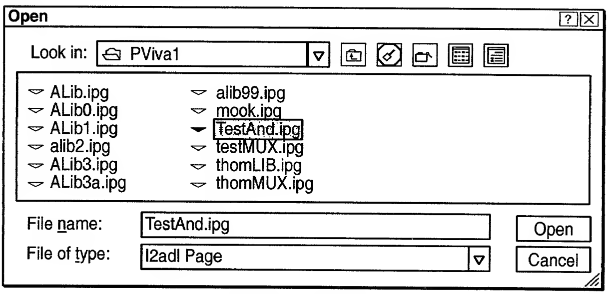


FIG._J-10

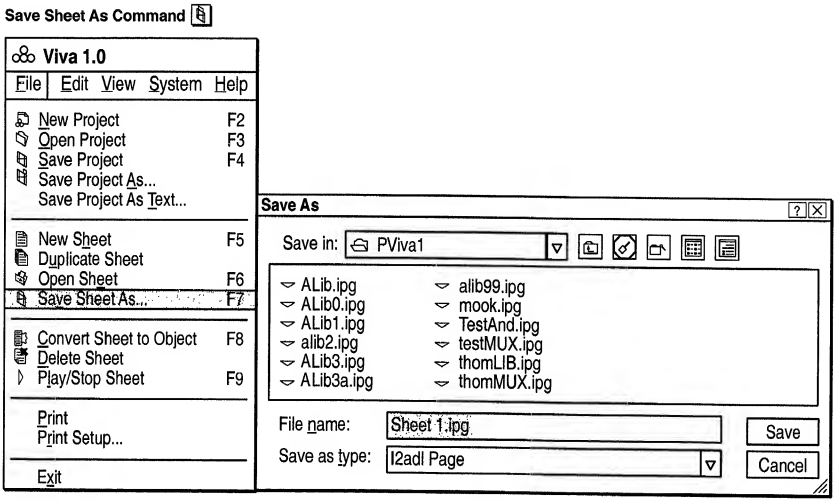

Save Sheet As Command
Viva 1.0
File Edit View System Help
New Project F2
Open Project F3
Save Project F4
Save Project As...
Save Project As Text...
New Sheet F5
Duplicate Sheet
Open Sheet F6
Save Sheet As... F7
Convert Sheet to Object F8
Delete Sheet
Play/Stop Sheet F9
Print
Print Setup...
Exit
Save As
Save in: PViva1
ALib.jpg
ALib0.jpg
ALib1.jpg
alib2.jpg
ALib3.jpg
ALib3a.jpg
alib99.jpg
mook.jpg
TestAnd.jpg
testMUX.jpg
thomLIB.jpg
thomMUX.jpg
File name: Sheet 1.jpg
Save as type: I2adl Page
Save
Cancel

FIG._J-11

Convert Sheet To Object Command

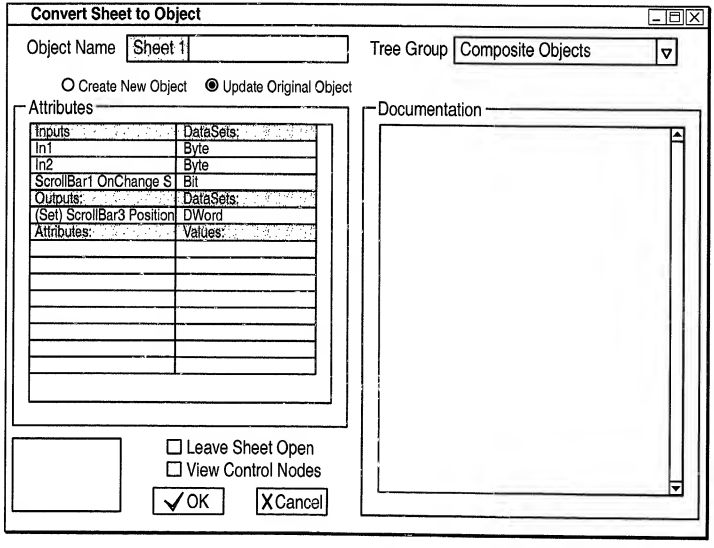


FIG._J-12

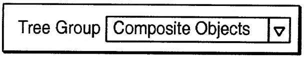


FIG._J-13

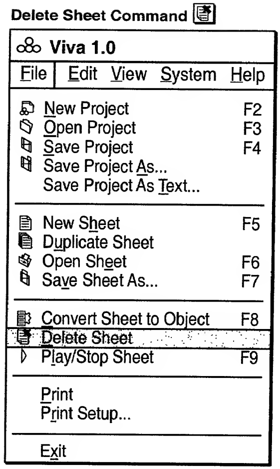


FIG._J-14

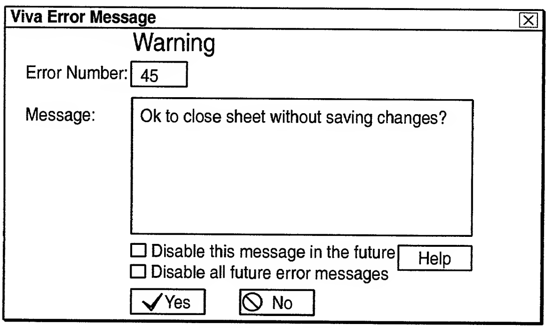


FIG._J-15

Run Behavior Page

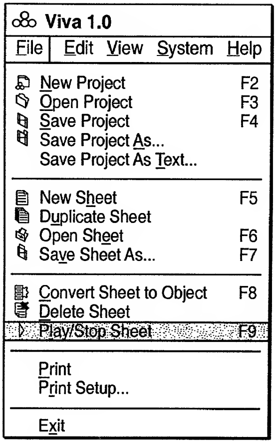


FIG._J-16

Print Command

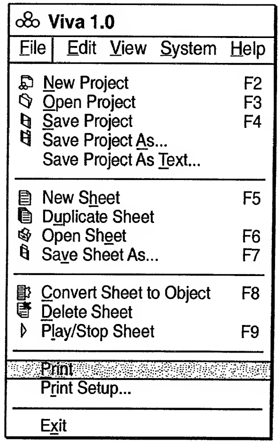


FIG._J-17

Print Setup Command

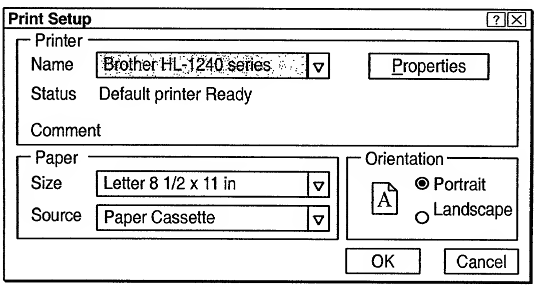


FIG._J-18

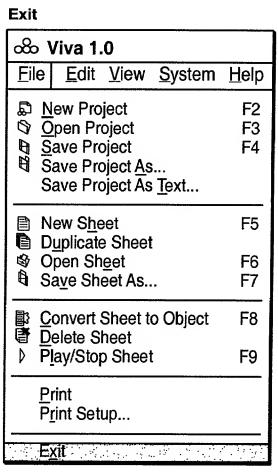


FIG._J-19

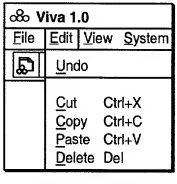
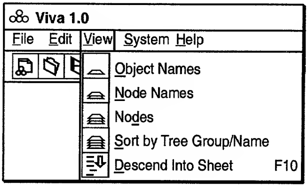


FIG._J-20

View Menu



View Object Names	Displays the object name above each object.
View Node Names	Displays each node name instead of each node's icon.
View Nodes	Displays node colors on Transports. (Node colors correspond to data types).
Sort by Tree Group/Name	Sorts the Object Tree in alphabetical order.
Descend into Sheet	This displays the Behavior Page of the selected object. (This feature is also available by double-clicking on the object.)

FIG._J-21

View Object Names

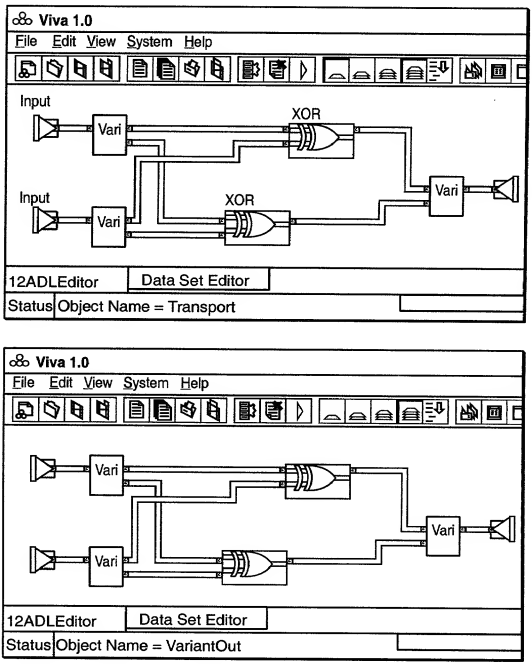


FIG._J-22

View Node Names

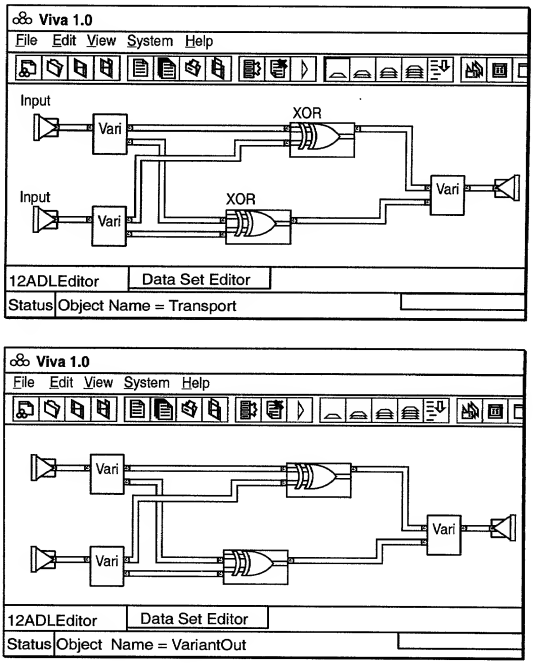


FIG._J-23

View Nodes

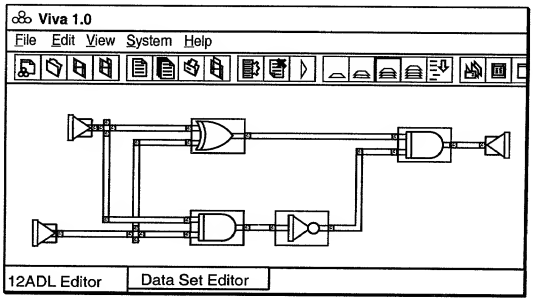


FIG._J-24

Sort by Tree Group/Name

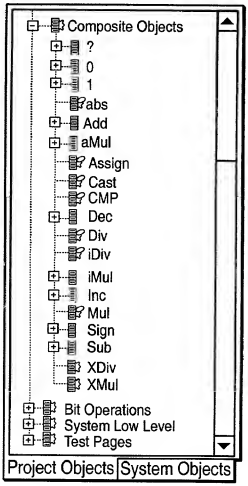


FIG._J-25

Descend Into Sheet

The Behavior Page of a VIVA Module can usually be diplayed by either double clicking on the object, or by clicking on the descend icon after the Module has been selected using a left mouse click. The following is the Behavior Page for an Exclusive OR Module.

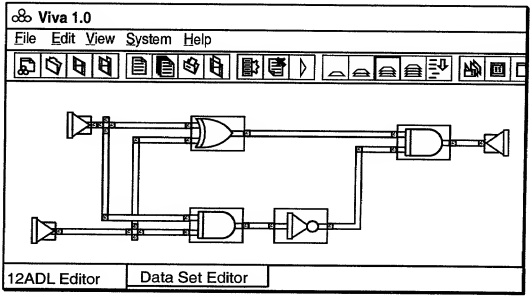
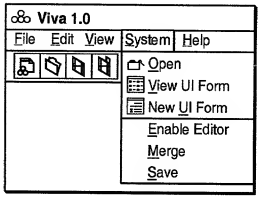


FIG._J-26

System Menu



Open System Select the target system (X86 or Floating Point Gate Array).

FIG._J-27

Open System

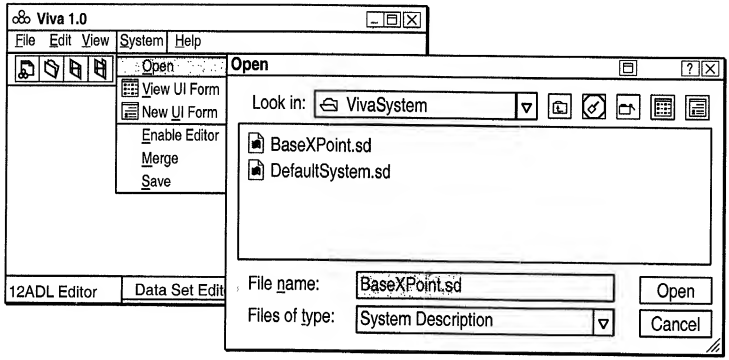


FIG._J-28

VIEW UI Form

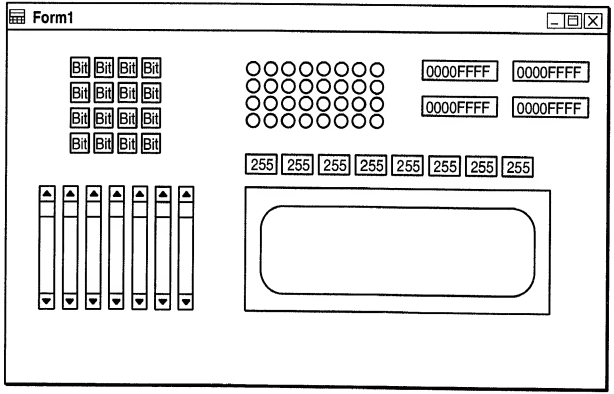


FIG._J-29

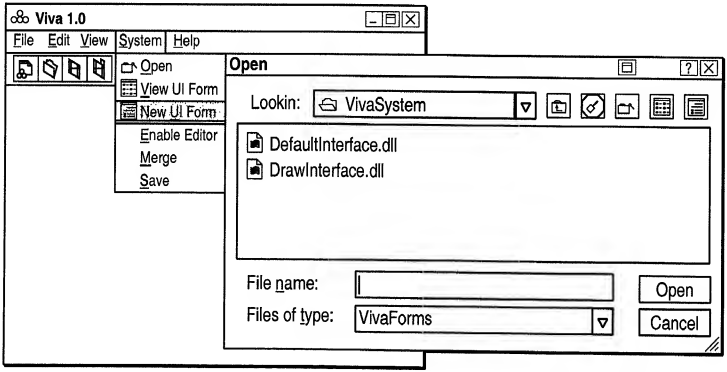

NEW UI Form
Viva 1.0
File Edit View System Help
Open
View UI Form
New UI Form
Enable Editor
Merge
Save
Open
Lookin: VivaSystem
DefaultInterface.dll
DrawInterface.dll
File name:
Files of type: VivaForms
Open
Cancel

FIG._J-30

Help Menu

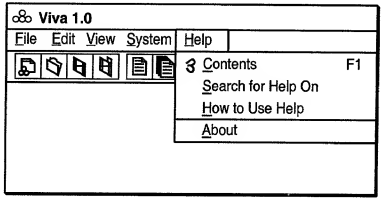


FIG._J-31

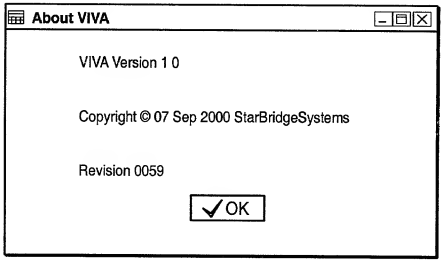


FIG._J-32

ToolBar Controls

The Graphical User Interface of VIVA was designed to allow you to specify the desired behavior of the target computer environment.

File Commands

New Project	Clears all objects, pages, and Modules.
Open Project	Load and display a VIVA project.
Save Project	Saves the current project.
Save Project As	Saves and renames the current project projects.
New Sheet	Creates a new blank sheet.
Duplicate Sheet	Duplicates the current sheet.
Open Sheet	Loads a sheet from a file.
Save Sheet As	Saves current sheet as a file.
Convert Sheet	Captures sheet behavior as a VIVA Module.
Delete Sheet	Erases and deletes current Behavior Page.
Run/Stop	Executes the behavior on the displayed Behavior Page.

View Details

View Object Names	The names of the objects are displayed above the objects.
ViewNode Names	The names of the nodes of the objects are displayed instead of the object's icon.
View Nodes	The node colors are displayed on Transports. (Node colors correspond to data types.)
Sort by Tree Group/Name	Sorts the Object Tree in alphabetical order.
Descend into Sheet	Display the Behavior Page of the selected object (Also available by double-clicking on the object.)
Open System	Selects the target system.
View UI Form	Displays the User Interface Form.
New UI Form	Allows you to Select a new User Interface Form.

FIG._J-33

DataSet Editor

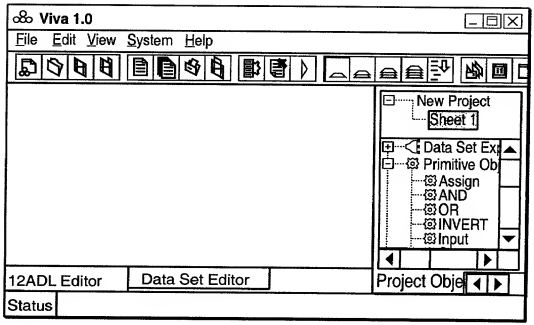
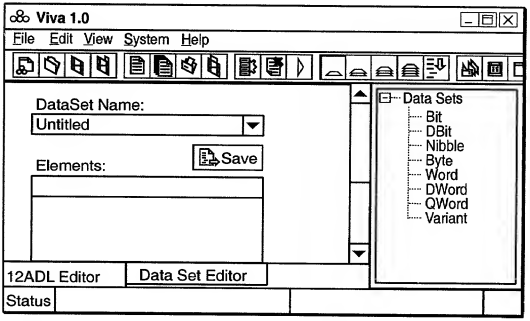


FIG._J-34

DataSet Editor



When done with defining the new data set, you press the Save Button Save

FIG._J-35

Edit Attributes Dialog

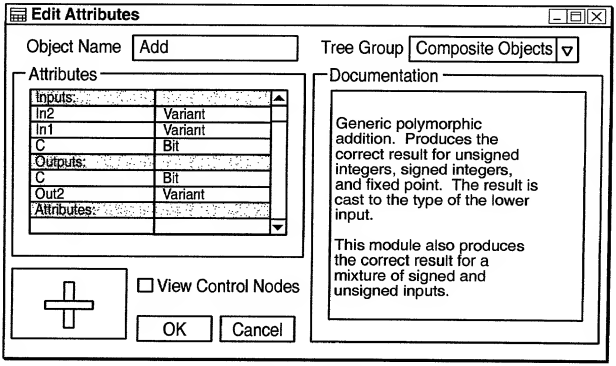


FIG._J-36

Constructing VIVA Modules

FIG._J-37

FIG._J-37-1

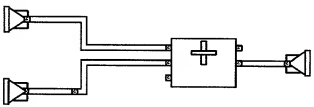


FIG._J-37-2

Behavior Pages

FIG._J-38

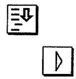


FIG._J-38-1

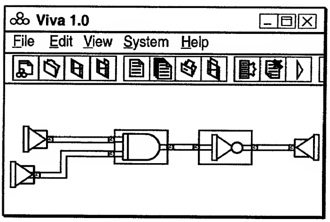


FIG._J-38-2

Convert Sheet to Object command from the File Menu, or select the ToolBar icon,  .

FIG._J-38-3

This Module may now be used to contruct other behavior pages for Modules with more complex behavior.

Node labels for the inputs and outputs of the NAND Module are the same labels on the inputs and outputs of the Behavior Page.

FIG._J-38-4

Connecting Transports

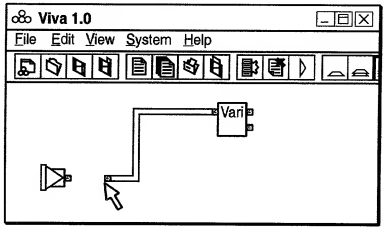


FIG._J-39

Connecting Junctions

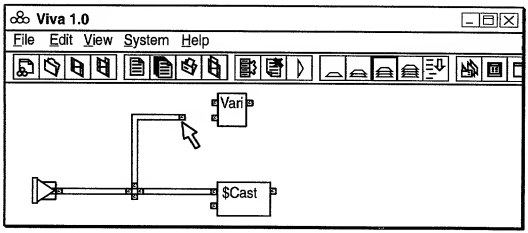


FIG._J-40

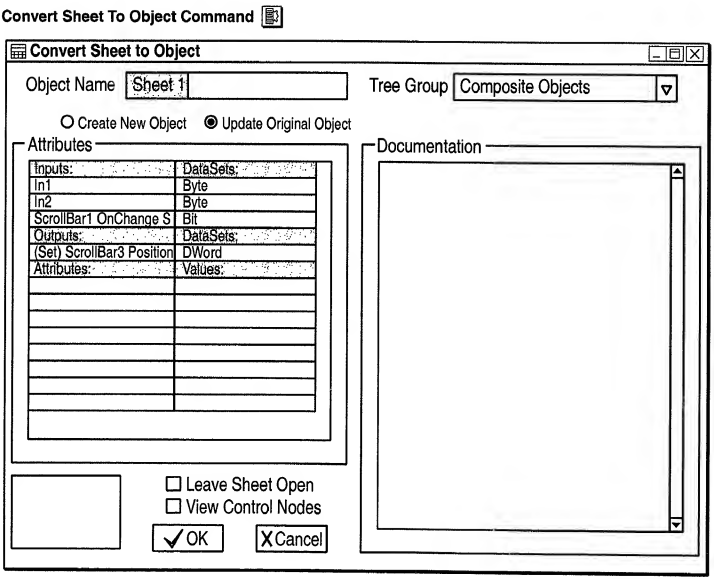

Convert Sheet To Object Command
Convert Sheet to Object
Object Name
Sheet 1
Tree Group
Composite Objects
Create New Object
Update Original Object
Attributes
Documentation
Inputs:
DataSets:
In1
Byte
In2
Byte
ScrollBar1 OnChange S
Bit
Outputs:
DataSets:
(Set) ScrollBar3 Position
DWord
Attributes:
Values:
Leave Sheet Open
View Control Nodes
OK
Cancel

FIG._J-41

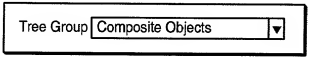


FIG._J-42

Object Trees

FIG._J-43

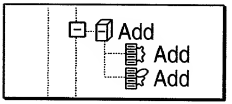


FIG._J-44-2

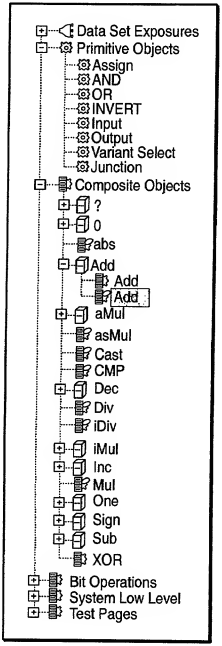


FIG._J-44-1

Modifying an Input

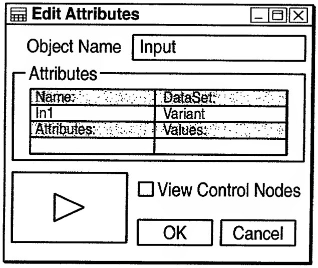


FIG._J-45

Modifying an Output

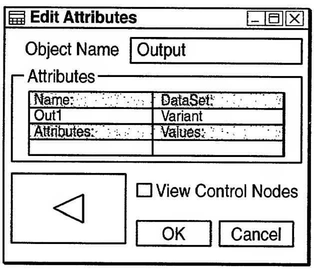


FIG._J-46

VIVA Constants

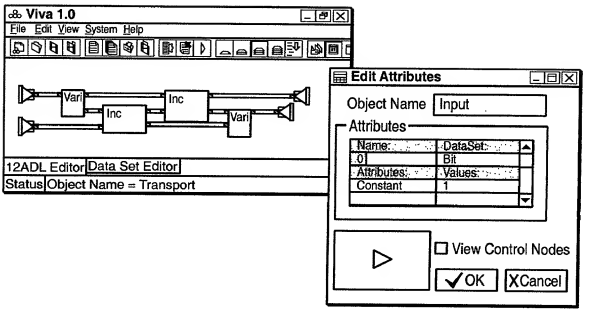


FIG._J-47

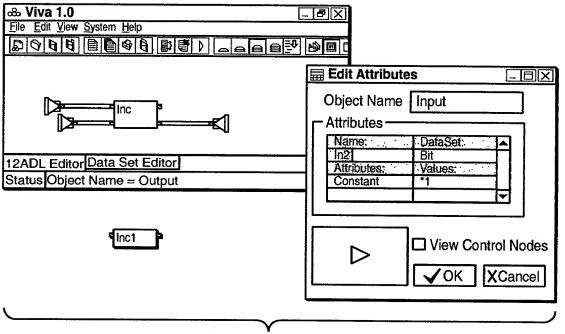


FIG._J-48

Forcing GateWare Allocation

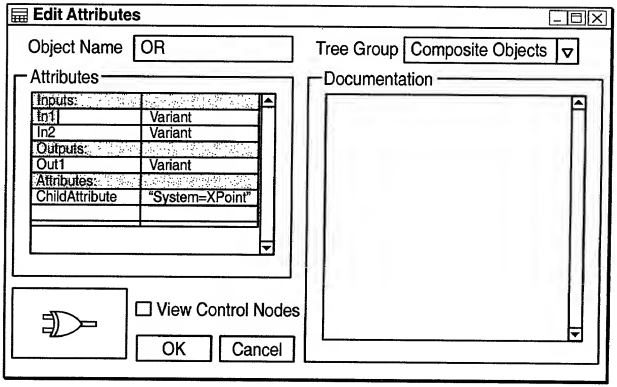


FIG._J-49

FIG._K1
(PRIOR ART)

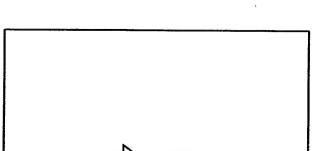


FIG._K2
(PRIOR ART)

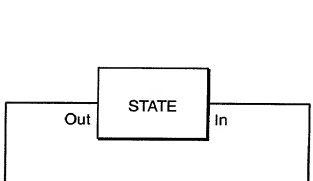


FIG._K3

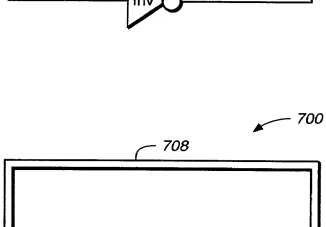


FIG._L1

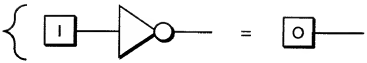


FIG._L2

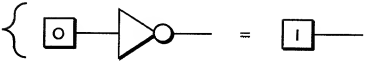


FIG._L3

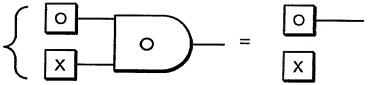


FIG._L4

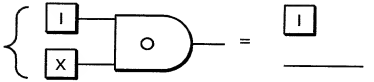


FIG._L5

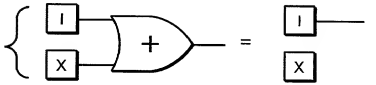
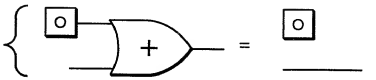


FIG._L6



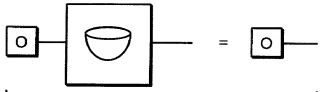


FIG._L7

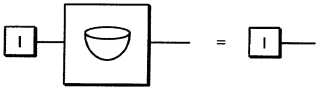


FIG._L8

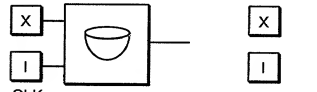


FIG._L9

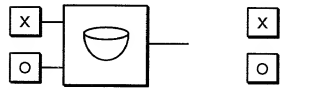


FIG._L10

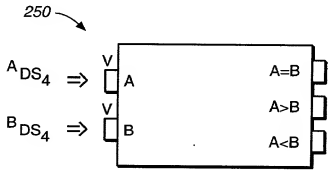


FIG._L11

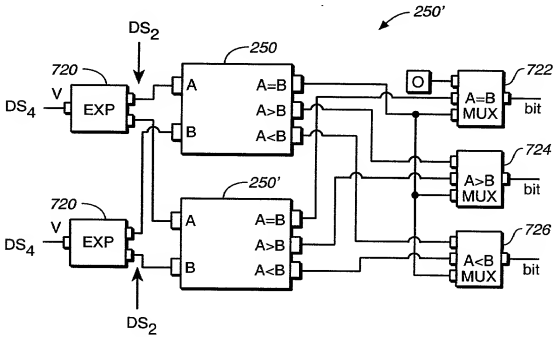


FIG._L12

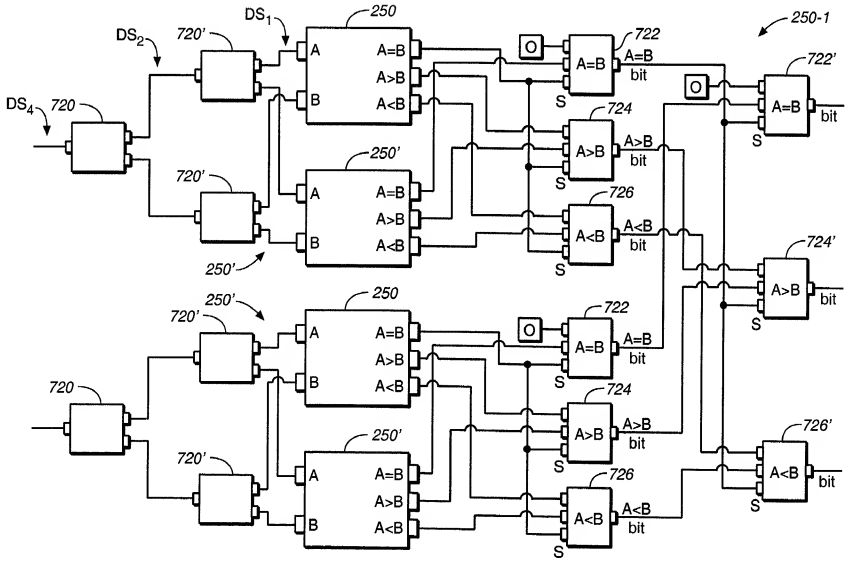

DS1
DS2
DS4
720
720'
250
250'
250-1
A
B
A=B
A>B
A<B
O
S
722
722'
724
724'
726
726'
bit

FIG._L13

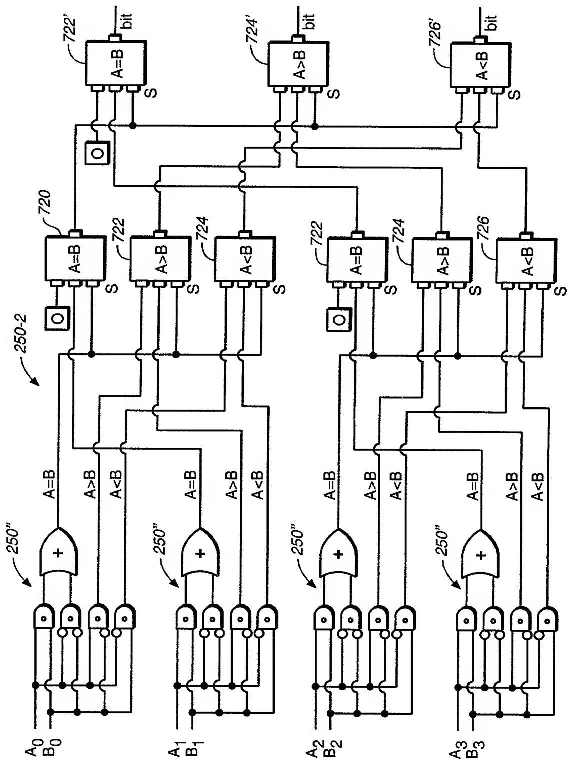

722'
724'
726'
A=B
A>B
A<B
bit
S
O
720
722
724
726
250-2
250"
+
A_0
B_0
A_1
B_1
A_2
B_2
A_3
B_3

FIG._L14

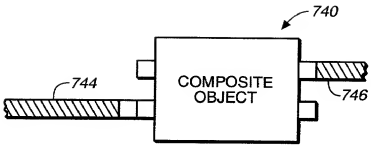


FIG._M1

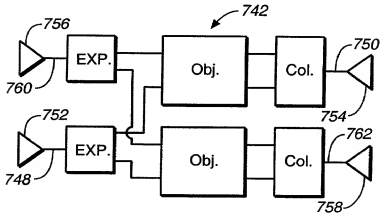


FIG._M2

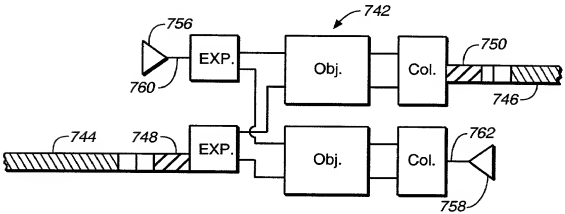


FIG._M3

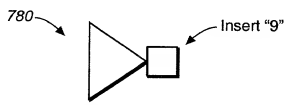


FIG._N1

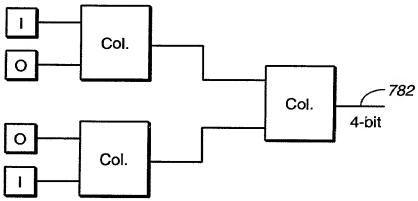


FIG._N2

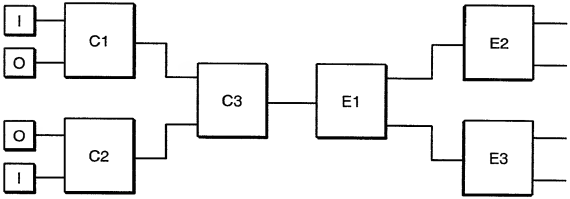


FIG._O1

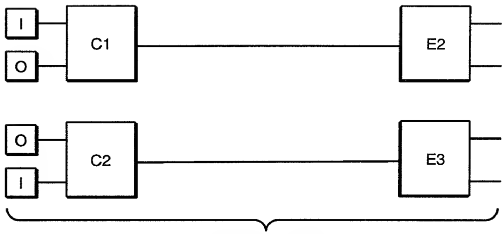


FIG._O2

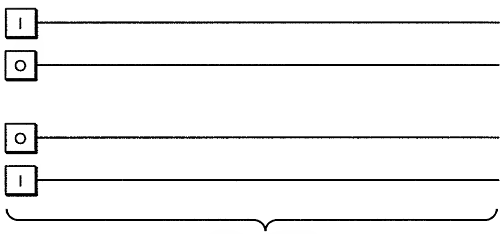


FIG._O3

Carry	1		0		1		
A		1	1	0	1	1	0
B		1	0	0	0	1	0
Sum	1	0	1	1	0	0	0

FIG._P1

Carry	1	0	0	1	1	0	
A		1	1	0	1	1	0
B		1	0	0	0	1	0
Sum	1	0	1	1	0	0	0

FIG._P2

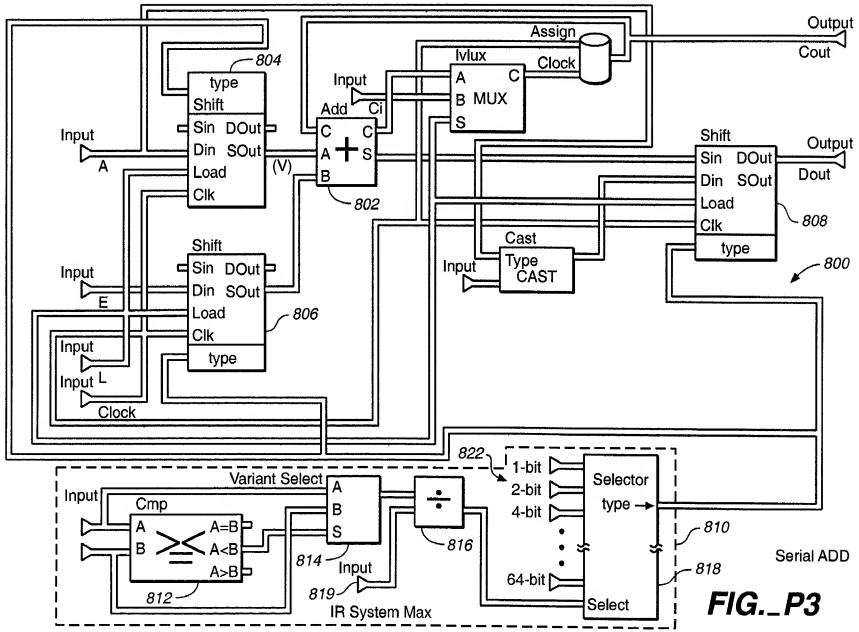

Assign
Output
Cout
804
type
Shift
Sin DOut
Din SOut
Load
Clk
Input
A
Input
Add Ci
C C
A S
B
(V)
802
Ivlux
A C
B MUX
S
Clock
Shift
Output
Dout
Sin DOut
Din SOut
Load
Clk
type
808
Cast
Type
CAST
Input
800
Shift
Input
E
Sin DOut
Din SOut
Load
Clk
type
806
Input
Input L
Clock
822
Variant Select
Input
Cmp
A
B
A=B
A<B
A>B
812
A
B
S
814
816
Input
819
IR System Max
1-bit
2-bit
4-bit
64-bit
Selector
type
Select
810
818
Serial ADD

FIG._P3

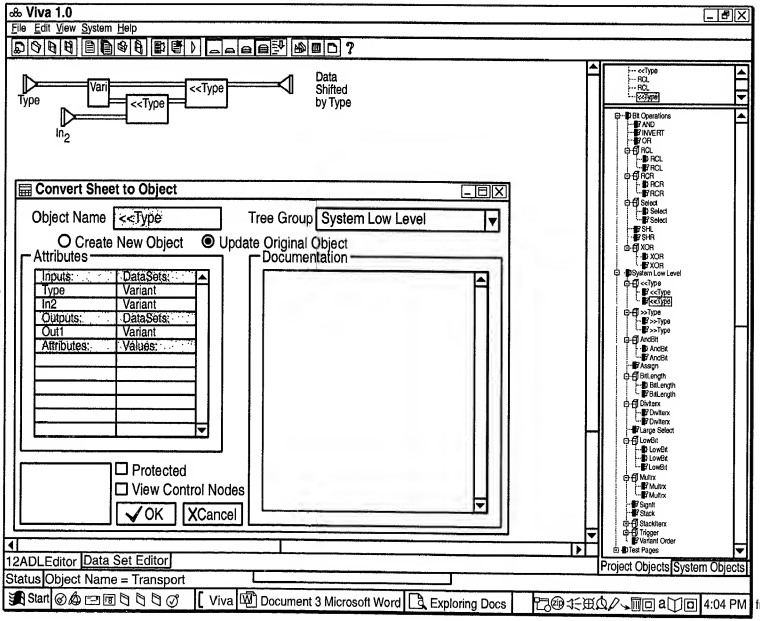
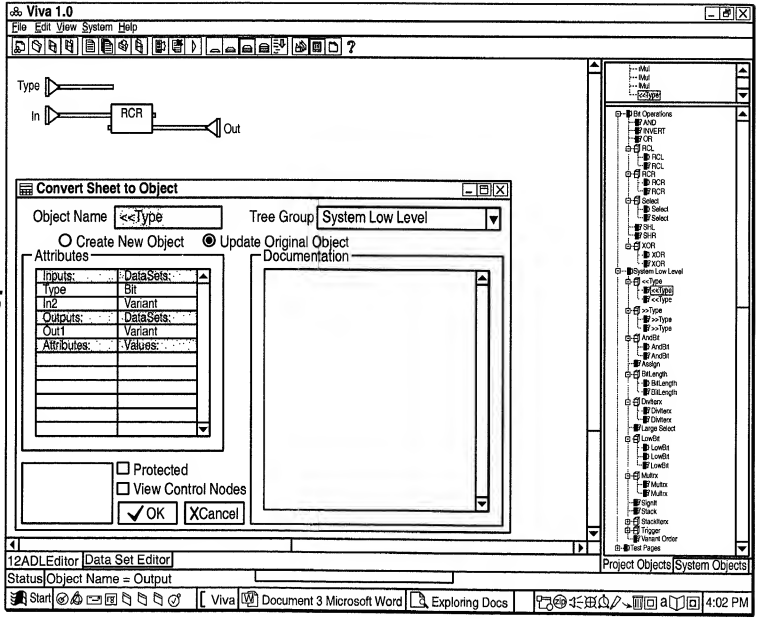

Viva 1.0
File Edit View System Help
Type
Vari
<<Type
<<Type
In2
Data Shifted by Type
Convert Sheet to Object
Object Name <<Type
Tree Group System Low Level
Create New Object
Update Original Object
Attributes
Documentation
Inputs: DataSets:
Type Variant
In2 Variant
Outputs: DataSets:
Out1 Variant
Attributes: Values:
Protected
View Control Nodes
OK
XCancel
12ADLEditor Data Set Editor
Status Object Name = Transport
Project Objects System Objects
Start
Viva
Document 3 Microsoft Word
Exploring Docs
4:04 PM

FIG._P4

FIG._P5


Viva 1.0
File Edit View System Help
Type
In
RCR
Out
Convert Sheet to Object
Object Name
<<Type
Tree Group
System Low Level
Create New Object
Update Original Object
Attributes
Documentation
Inputs:
DataSets:
Type
Bit
In2
Variant
Outputs:
DataSets:
Out1
Variant
Attributes:
Values:
Protected
View Control Nodes
OK
XCancel
12ADLEditor
Data Set Editor
Status
Object Name = Output
Project Objects
System Objects
Start
Viva
Document 3 Microsoft Word
Exploring Docs
4:02 PM

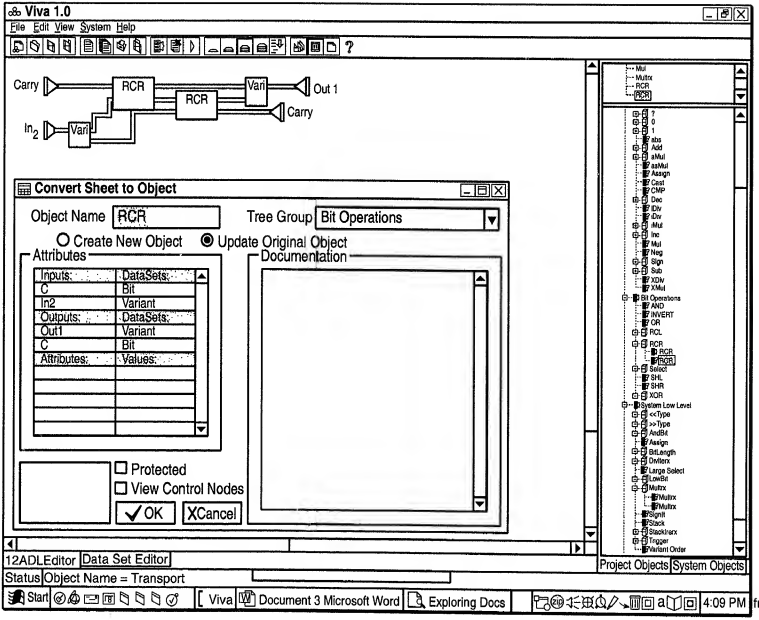


FIG._P6

from 20

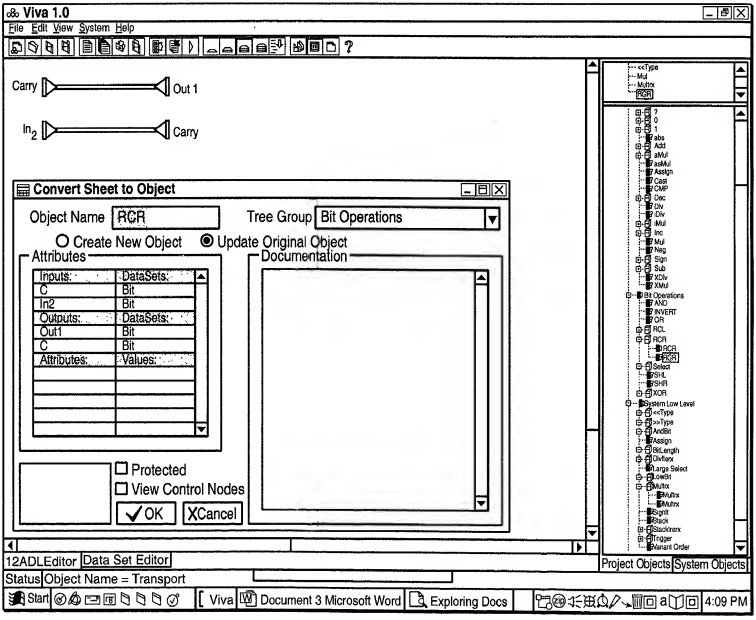


FIG._P7

from 20